AA0040758 F

Firyago I. S.
UR 0482
3-78

Soviet Inventions Illustrated, Section I Chemical, Derwent,

236010 TREATMENT OF NICKEL AND COPPER-NICKEL MATTES Where to simplify the process and to reduce iron content in the matte to 0.2-0.25, a layer of the latter (0.5m) is cooled in an open mixer from 1150 to 900°C in 1 hour. The method is based on effinity of iron in the matte towards oxides moving to the surface of the matte and a metallic component separating in the form of solid solution crystals. According to the proposed method, ready matte is poured into a stationary open mixer lined with chamotte and held there for 1 hr. The thickness of the melt should be 0.5m. The temp. of the matte is decreased from 1150 to 900°C when solid phases separate out. The oxide phase moves up on the surface of the melt and the metallic phase settles at the bottom of the mixer. After 1 hr, the matte is discharged from the mixer and cast in sand moulds or granulated in water. 21.4.67. as 1152034/22-1.
V.A BOROV'EV et al. (12.6.69.) Bul.6/24.1.69.
Class 40a. Int.Cl. C22b.

LD 18

19750445

AA0040758

AUTHORS: Vorob'yev, V. A.; Salomatin, I. Ye.; Firyago, I. S.; and Chermak, L. L.

19750446

Hematology

USSR UDC 591.044.3:615.387-012

MEDVEDEV, P. M., and FISANOVICH, T. I., Laboratory of Organ and Tissue Conservation and Transplantation, Leningrad Institute of Hematology and Blood Transfusion

"Traumatization of Blood and Bone Marrow Cells During Deep Freezing"

Leningrad, Tsitologiya, Vol 15, No 2, 1973, pp 129-143

Abstract: A comprehensive literature review is given, and data from various sources are compared. During deep (down to -78°C) and superdeep (-196 to -296°C) freezing, tissue trauma is caused not just by the mechanical factor of formation of ice crystals and the ensuing dehydration. Shifts occur in the distribution of electrolytes, causing irregular changes in the osmotic pressure. Furthermore, profound alterations take place in the spatial relationship between water molecules and the macromolecules of biopolymers, the orientation of hydrophobic and hydrophilic surfaces is disarrayed, and the crystal lattices of water surrounding the macromolecules are rearranged. These changes in the mutual relations between subcellular structures ultimately disturb not only physical processes, such as diffusion of particles, but also enzymatic processes. It is believed that all the physico-chemical factors involved in deepfreezing and defrosting can be elucidated and eventually brought under control.
1/1

UDC 615.216.5.015.45

USSR

FISENKO, V. P., POLGAR, A. A., and SMIRNOVA, V. S., Department of Pharmacology, Faculties of Medicine and Public Health, 1st Moscow Medical Institute imeni I. M. Sechenov, and the Laboratory of Infectious Pathophysiology of the Nervous System, Institute of Normal and Pathologic Physiology, Academy of Medical Sciences USSR

"Microelectrophysiologic Investigations on the Mechanisms of Action and Localizations of a Number of New Curariform Drugs"

Moscow, Farmakologiya i Toksikologiya, Vol 36, No 2, 1973, pp 206-209

Abstract: The mechanisms of action of several new curariform drugs, anatruxonium (I), cyclobutonium (II), decadonium (III), and diadonium (IV) were investigated by means of microelectrode recordings of rat phrenic nerve-diaphragm preparations. The studies were conducted with male August rats, with the nerve-diaphragm preparations kept at room temperature in Tyrode's solution saturated with a mixture of oxygen and carbon dioxide (carbogen). The diameters of the tips of the microelectrodes, which were filled with 2.5 M KCl, were 0.5 μ. Control values for the membrane potentials and the end plate potentials were obtained by adding ditiline, decamethonium, or D-tubocurarine to the bath. The results showed that the addition of I to a

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USSR

FISENKO, V. P., et al., Farmakologiya i Toksikologiya, Vol 36, No 2, 1973, pp 206-209

concentration of 6×10^{-8} M, II (1.25×10^{-7} M), III (1.2×10^{-7} M), or IV (1.4×10^{-7} M) did not lower the membrane potential and, thus, did not depolarize the postsynaptic membrane. They did decrease the amplitude of the end plate potentials, indicating their effect on the choline receptors at the end plate. The show that these new curariform drugs exert their inhibition of the neuromuscular junction by affecting the receptors on the end plate in such a manner that they cannot react with acetylcholine.

USSR

UDC 619:616.981.452:636.4

KUSINIR, A. T., BURTSEV, V. I., BONDARENKO, I. M., ZHOGOLEVA, S. P., SERGEYEV, V. A., FISENKO, O. F., ORLOV, V. A., and TROYAN, N. D., All Union Scientific Research Institute of Veterinary Virology and Microbiology

"Aerosol Vaccination of Swine Against Swine Fever"

Moscow, Veterinariya, No 10, Oct 70, pp 50-52

Abstract: Cultural vaccine prepared from the 31st passage of the lapinized K strain of swine fever virus in a culture of lamb testicular cells and concentrated 10-fold was highly immunogenic in gilts and piglets vaccinated by the aerosol method. Exposure of the animals for 5 minutes to vaccine diluted 1:1000 with physiological solution conferred stable immunity on 50% of the gilts and 100% of the piglets. Even in a dilution of 1:10,000, the vaccine produced immunity in a number of the animals. The immunizing dose (ImD_{50}) of the vaccine applied via aerosol was equivalent to 7.25 intramuscular ImD_{50} for gilts and 5.25 ImD_{50} for piglets. Clinical-hemoatological and biochemical studies of the vaccination process showed that the time at which the immunological reaction occurred and its intensity were the

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USSR

KUSHNIR, A. T., et al, Veterinariya, No 10, Oct 70, pp 50-52

same, regardless of the method of vaccination. The degree of decrease in immunogenic activity of the vaccine in the process of atomization was less than 54.2% for one of the vaccines tested.

2/2

UDC 576.852.23.097.29

USSR

DALIN, M. V., MIGUNOV, V. N., FISH, N. G., POLIKAR, A. Ch., and IL'NITSKAYA, Ye. A., Moscow Institute of Vaccines and Sera imeni Mechnikov, and Sofia Institute of Epidemiology and Microbiology

"Heterogeneity of a Specific Toxin in a Filtrate of Corynebacterium diphtheriae"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, Jul 70, pp 115-118

Abstract: In an earlier study, the authors showed that toxin in filtrates of Corynebacterium diphtheriae strain PW-8 may consist not only of proteins with a sedimentation rate of about 4S, but also of larger components. In the present work, the molecular composition of toxic filtrates from the Weisensee and Massachusetts varieties are compared and the composition of filtrates obtained at different times of culturing is analyzed. C. diphtheriae Strain PW-8 grown in stab culture produced two types of specific toxin in the filtrates: macromolecular, with a sedimentation rate of about 6 to 11S; and low-molecular, with a sedimentation rate of about 4-5S and possessing greater toxicity and antibinding activity (attributed to proteolysis of the molecules of specific toxin during culturing). The macromolecular toxin appeared in the filtrates within a few hours after the start of growth and persisted throughout (36 hours). It is tentatively identified as Ehrlich's "toxon."

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USSR

UDC 621.35.035

NIGMATULLIN, R. Sh., FISH, V. M., GORDEYEVA, A. P.

"Calculation of the Electrochemical Concentration Converters of Nonelectric Variables"

Tr. Kazan. aviats. in-ta (Works of Kazan' Aviation Institute), 1971, vyp. 137, pp 70-73 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L338)

Translation: Relations are presented for calculating the characteristics of the cathode region of an electrochemical sensor of nonelectric variables. The relations were obtained for various configurations of the channel considering the sign-sensitive design of the device.

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USSR

UDC 533.697:532.55

STEN'KIN, YE. D., FISHBEYN, B. D.

"Computer Determination of the Total Pressure Restoration Coefficient of a Nonisothermal Gas Flow"

Tr. Kuybyshev. aviats. in-t (Works of Kuybyshev Aviation Institute), 1970, No. 45, pp 54-60 (from RZh-Aviatsionnyye i raketnyye dvigateli, No 5, May 72, Abstract No 5.34.13)

Translation: A calculation technique, an algorithm for the solution, and a flow chart are presented for the computer calculation of the total pressure restitution coefficient of a one-dimensional flow moving in a channel with a straight axis under an arbitrary change in the total temperature along the channel. The program compiled makes it possible to solve variational problems to determine the optimal shape of the channel for a given law of heating or to establish an optimal law of heat supply (or heat transfer) for a given geometry or a permissible region of change in the geometry. The program can also determine the magnitude of the limiting heat supply of gas for given boundary conditions. The algorithm of the program can be used in solving similar problems for a nonhomogeneous gas

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USSR

STEN'KIN, YE. D., FISHBEYN, B. D., Tr. Kuybyshev. aviats. in-t, 1970, No. 45, pp 54-60

flow. Sample calculations are given supporting the considerable dependence of the total pressure restitution coefficient on boundary conditions. 3 ref. Resume.

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USSR

UDC 533.697.532.55

STEN'KIN, YE. D., FISHBEYN, B. D.

"Thermal Losses of Total Pressure in a Gas Flow"

Tr. Kuybyshev. aviats. in-t (Works of Kuybyshev Aviation Institute), 1970, No. 45, pp 48-54 (from RZh-Aviatsionnyye i raketnyye dvigateli, No 4, Apr 72, Abstract No 4.34.18)

Translation: Gas flow with heating in axisymmetric channels with variable cross section is considered. Through a theoretical and computational analysis formulas were established for determining thermal losses of total pressure in the gas flow with an error of less than 0.1-0.2%. A numerical analysis was made by which one could determine the correction coefficient for determining losses with an accuracy sufficient for engineering purposes. The formulas can be used in calculating thermal devices in which there is a gas flow.

1/1

UDC 51

USSR

ZAK, YU. A., LENIN, A. P., FISHBEYN, M. A.

"Algorithms for Calculating the Technological Component Cost of Various Types of Finished Production and Intermediate Products of Complex Production Complexes"

V sb. Prom. kibernetika (Industrial Cybernetics -- Collection of Works), Kiev, 1971, pp 205-212 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V541)

No abstract

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USSR

UDC 619:616.981.42-084:636.32/.38

TRILENKO, P. A., Professor, FISHBEYN, V. Ya., Candidate of Veterinary Sciences, Leningrad Veterinary Institute, BALANDIN, F. G., Chief Veterinary Surgeon of Veterinary Division, GUKOV, A. S., Chief Veterinary Surgeon, and FOMENKO, T. V., Veterinary Surgeon of Oblast Veterinary Laboratory, Volgogradskaya Oblast

"An Experiment in Sanitation Among Flocks of Sheep for the Prevention of Brucellosis"

Moscow, Veterinariya, No 11, 1971, pp 54-55

Abstract: Because brucellosis vaccination with strain 19 produces low immunity in sheep and the antibodies developed cannot be differentiated from those produced during natural brucellosis, an experiment with live nonagglutinating vaccine from strain Br. melitensis K-24 was conducted in a sovkhoz over a period of 7 years. It was established that sheep which are brucellosis carriers but do not react in tests with standard antigens, may, after vaccination with strain K-24, have agglutinins in their blood and react to the standard antigens, owing to provocation of the latent infection by the vaccinal culture. Thus, vaccine from this strain can help clear a flock of hidden brucellosis carriers, at the same time promoting greater resistance to infection among the rest of the flock. Animals reacting allergically need not be removed, as the

USSR

TRILENKO, P. A., et al., Veterinariya, No 11, 1971, pp 54-55

K-24 vaccine also produces an allergic reorganization. As a result of systematic vaccination, isolation, and/or removal of reactive animals, coupled with other preventive measures, at the end of the experiment in 1969, an absence of brucellosis-caused abortions, practical absence of serologically reactive sheep, and marked decrease of postvaccination allergy were recorded.

2/2

1/2 013 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--SURGICAL TREATMENT OF UPPER THORACIC SCOLIOSIS -U-

AUTHOR--FISHCHENKO, V.YA.

F

COUNTRY OF INFO--USSR

SOURCE--ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE, 1970, NR 6, PP 22-26

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BONE DISEASE, ORTHOPEDIC SURGERY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0901 STEP NO--UR/9115/70/000/006/0022/0026

CIRC ACCESSION NO--AP0129966
UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0129966

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHOR ANALYSES THE TREATMENT OF 23 PATIENTS WITH UPPER THORACIC SCOLIOSES OF VARIOUS ETIOLOGY. THE HIGH STABILITY OF THE DEFORMITY, COMBINATION WITH THE KYPHOTIC COMPONENT, DEVELOPMENT OF CURVATURE ON A SMALL SEGMENT OF THE SPINE, ABSENCE OF COMPENSATORY COUNTERCURVATURES IN THESE TYPES OF SCOLIOSIS REQUIRE A SPECIAL APPROACH DURING CHOICE OF THE OPERATIVE METHOD OF TREATMENT. THE AUTHOR'S DATA INDICATE THAT ONLY CORRECTIVE OPERATIONS ALLOWED TO INTERRUPT THE PROGRESS OF DEVIATION AND DIMINISH THE LATERAL AND KYPHOTIC COMPONENTS OF THE DEFORMITY. AFTER PREOPERATIVE PREPARATION, FIVE PATIENTS WITH POSTERIOR SPONDYLODESIS EXHIBITED TOTAL LOSS OF CORRECTION AND PROGRESS OF SCOLIOSIS. UNDER THIS PATHOLOGY, PERFORMANCE OF THE LAST OPERATION WAS ABANDONED. FACILITY: TSENTRAL'NOGO INSTITUTA TRAVMATOLOGII I ORTOPEDII.

UNCLASSIFIED

UDC 621.396.6--181.5 (088.8)

USSR

BARANOV, A.I., BATENIAURI, V.D., VOSKOBOYNIKOV, I.I., GAVRILOV, R.A., GALYATKIN, V.P., GOLUBTSOV, K.S., ZAMTRZHOVSKIY, M.B., ZALIPSKIY, A.I., ZLOTIN, V.A., KAZATSKER, L.I., LAGUTKIN, G.V., LARIONOV, YU. S., PREOBRAZHENSKIY, S.P., MALKIN, D.L., RAMENSKIY, I.V., SIMONOVA, I.S., TIKHOMIROV, B.G., FISHEL', L.SH., SHUBERT, M.M.

"Device For Deposition Of Multilayer Coverings In A Vacuum"

USSR Author's Certificate No 279291, filed 16 June 68, published 30 Nov 70 (from RZh--Radiotekhnika, No 9, Sep 1971, Abstract No 9V272P)

Translation: A device proposed for deposition of multilayer coverings in a vacuum is fulfilled in the form of a number of successively mounted independent operating chambers supplied with evaporators, heaters, and an exhaust system. The device contains a mechanism for transporting substrates, a mechanism for loading and unloading, and a drive mechanism. With the object of increasing the reliability of the device and improving the quality and reproducibility of the coverings deposited, outside of the area of the arrangement of operating chambers and parallel to it a supplementary vacuum chamber is installed, which serves for the deposition in it of the transporting mechanism, and which communicates with each of the operating chambers by means of vacuum-overlapping transfer windows located on the side wall

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USSR

BARANOV, A. I., et al., USSR Author's Certificate No 279291, filed 16 June 68, published 30 Nov 70 (from RZh--Radiotekhnika, No 9, Sep 1971, Abstract No 9V272P)

of the supplementary chamber at places for connection to it of the operating chambers. Each of the operating chambers or a group of them is provided with an individual system of high-vacuum pumping.

2/2

USSR UDC 617-089.583.29-07:616.153.915-074

[redacted], V. M., Chair of Hospital Surgery, Kazan' Medical Institute imeni S. V. Kurashov, Laboratory of Experimental Surgery, Institute of Surgery, imeni A. V. Vishnevskiy, Academy of Medical Sciences USSR, Kazan

"Level of Nonesterified Fatty Acids in the Blood During Deep Hypothermia and the Effect of Heparin and Protamine on It"

Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, No 5, 1971, pp 79-80

Abstract: Chilling dogs in ice water to a body temperature of 30 and 25°C raised the level of nonesterified fatty acids (NFA) in the blood considerably, but a temperature of 20°C lowered the level. Intravenous injection of 1000 to 3000 units/kg of heparin markedly lowered the NFA level during hypothermia. Intravenous injection of 20 mg/kg of protamine before and during hypothermia also lowered the NFA level, but to a lesser degree than did heparin.

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UDC 616.981.551

USSR

VALITOV, S. S., FISHELEV, V. M., and MAGER, O. N.

"Reanimation in Generalized Tetanus"

Kazan', Kazanskiy Meditsinskiy Zhurnal, No 5, 1971, pp 91-93

Abstract: The importance of nonspecific therapy for acute generalized tetanus is emphasized in this detailed description of the successful efforts made by a hospital team, provided with special equipment and facilities, to save the life of a 43-year-old woman who developed tetanus 10 days after receiving a head injury. She was given intravenous and then intramuscular injections of PSS (prophylactic dose of tetanus antitoxin) for the first 3 days until convulsions set in and gradually intensified. Sodium hydroxybutyrate provided only temporary relief. Respiratory and cardiac arrest occurred during a seizure. Prompt intubation of the trachea, artificial lung ventilation, external massage of the heart, and injection of various drugs (neuroplegics, tubocurarine) eventually restored the heart beat and normal breathing. The main efforts thereafter were directed toward controlling pulmonary complications and hyperthermia, maintaining normal hemodynamics, and correcting the water-electrolyte balance and alkaline reserve. The most dangerous complication was hypokalemic

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USSR

VALITOV, S. S., et al., Kazanskiy Meditsinskiy Zhurnal, No 5, 1971, pp 91-93

alkalosis which was treated with 0.3% KCl in a 5% glucose sclution with insulin for 3 days. The patient was discharged in satisfactory condition 1-1/2 months after admission to the hospital.

USSR

UDC: 536.421.4+536.421.1

BELAN, B. A., BOLOTOV, I. Ye., and [redacted]

"Effect of Impurities on the Crystallization of Selenium Spherolites"

V sb. Kristallizatsiya i faz. prevrashcheniya (Crystallization and Phase Transformations--collection of works) Minsk, "Nauka i tekhn." 1971, pp 98-105 (from RZh-Fizika, No. 9, 1971, Abstract No. 9E584)

Translation: The effect of In and Te impurities on the crystallization of thin amorphic Se films is investigated by the method of the diffractional electron microscope for ordinary heating as well as for heating by the electron beam in the microscope. It is found that In changes the relationship of the crystal growth rates on a mica substrate and promotes the formation of needle-shaped crystals later on due to the splitting of crystals transformed into regular sheaf-shaped crystals and spherolites. These cause granulation and increases in the number of crystal seeds without changing their morphology and texture. In the heating of the films by the electron beam with increasing beam intensity, the splitting is accelerated in films with both impurities,

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USSR

BELAN, S. A., et al., Kristallizatsiya i faz. prevrashcheniya (Crystallization and Phase Transformations--collection of works) Minsk, "Nauka i tekhn," 1971, pp 98-105 (from RZh-Fizika, No 9, 1971, Abstract No 9E384)

as in pure Se. This also occurs for other materials forming spherolites, such as TiO_2; the latter indicates that the increasing tendency to the formation of spherolites with increasing growth rate is a general law. Author's abstract.

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USSR

UDC 669.71.053.4

FISHER, A. YA., NASHEL'SKIY, A. YA., Scientific Editors

Moscow, Metallurgiya Tsvetnykh i Redkikh Metallov, 1970 (Metallurgy of Non-Ferrous and Rare Metals, 1970), 1971, 124 pp

Translation of Annotation: Data are reported on the development of aluminum production in foreign countries in recent years and results are given on experimental work in alumina production, the technology of the electrolytic production of aluminum, and aluminum refining. The second article provides information on 1969-1970 work on the technology of the growing volumetric single crystals and epitaxial films of semiconductor solid solutions. The most important trends in the application of single crystal solid solutions are analyzed and their effect on the development of new production methods is discussed. This booklet will be of interest to scientific workers and the technical-engineering staff of scientific research institutes and enterprises of non-ferrous metallurgy and the electronic industry.

Translation of Table of Contents:

Metallurgy of non-ferrous and rare metals.

1/2

USSR

FISHER, A. YA., et al, Metallurgiya Tsvetnykh i Redkikh Metallov, 1970, 1971, 124 pp

2/2

USSR

UDC 669.715.004.82

ISTRIN, M. A., and FISHER, A. YA.

"The Basic Directions in the Development of the Secondary Aluminum Industry (Continuation of the Discussion)"

Moscow, Tsvetnyye Metally, No 2, Feb 71, pp 58-62

Translation: The following problems are considered in the article: the preparation of ore for smelting, the technique of smelting of secondary aluminum alloys, the assortment and quality of alloys, and the organizational structure of the secondary aluminum industry.

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UDC 550.42

USSR

BORISENKO, L. F., MILLER, A. D., and FISHER, E. I., Institute of Mineralogy, Geochemistry and Crystallochemistry of the Rare Elements, Moscow

"Abundance of Gold in Ultrabasites"

Moscow, Geokhimiya, Akad. Nauk SSSR, No 2, Feb 72, pp 188-195

Abstract: A relatively high gold content for various igneous rocks has been suggested during the past decade.

In the present study, 79 samples of ultrabasites, pyroxenites, hornblendes, peridotites, dunites, olivinites and serpentinites were taken in the Urals, and 7 similar samples in Armenia. These showed a gold content varying from 0.005 to 0.300 g/t. In general, the content was higher than normally expected for this class of minerals, especially in the case of many gabbro-pyroxenite-dunite, and hyperbasite, formations in certain districts of the Urals.

The gold was mainly in the form of small nuggets of native Au or electrum, reaching 1-2 mm in diameter; it exhibited siderophile and chalcophile properties, as well as higher content in sulfide-rich rocks. The gold was both primary in character and also secondary, as introduced during hydrothermal-metasomatic processes. The presence of sulfur was an important factor in the transport and local concentration of gold in most of the minerals studied.

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AA0046423

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent, 1-70

241613 STEREO EFFECT IN X-RAYS is produced by a device using two Rontgen tubes, obturators covering one of the two tubes in turn and controlled remotely, and a receiving screen, differing in that the Rontgen tubes 1 are mounted on an arched runner 2 with a straight guide 3 so that they can be moved together in a plane to form angles between 7 and 25° between the rays striking the object 4 under investigation. They can be moved closer to the object coincidentally with obturators 8. The electronic-optical image brilliance transformer 5 has eyepieces 7 with another obturator 6 and a device 14 to allow visual setting of distances. This expands diagnostic possibilities and intensifies the stereo effect. 1.8.67. as 1177061/31-16. G.G.FISHER. (28.8.69.) Bul.14/18.4.69. Class 30a, 57a. Int.Cl. A61b, A61n.

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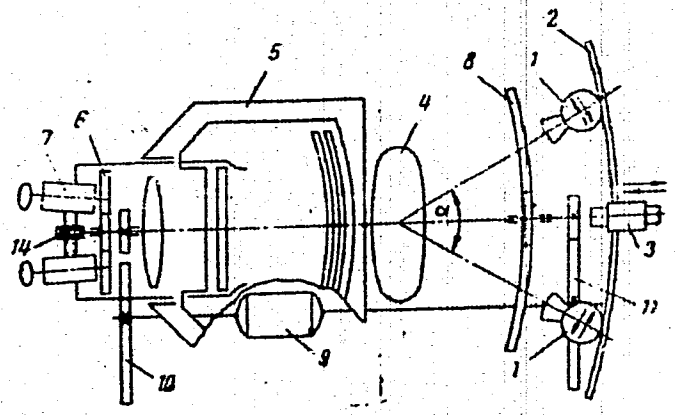
19781631

AA0046423



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JW

19781632

1/2 027 UNCLASSIFIED PROCESSING DATE 27NOV70

TITLE--BUTADIENE NITRILE RUBBERS -U-

AUTHOR-(05)-FISHER, S.L., RADCHENKO, I.I., PERMINOV, A.M., PODDUBNYY, I.YA., RABINERZON, M.A.

COUNTRY OF INFO--USSR

F

SOURCE--U.S.S.R. 256,250

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--17MAR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--NITRILE RUBBER, CHEMICAL PATENT, COPOLYMERIZATION, BUTADIENE, ACRYLONITRILE, SOAP, FROST, LOW TEMPERATURE EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1789 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132055

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AA0132055

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE RUBBERS ARE PRODUCED BY AQ. EMULSION COPOLYM. OF BUTADIENE WITH ACRYLONITRILE IN THE PRESENCE OF FREE RADICAL TYPE INITIATORS, EMULSIFIERS COMPRISING SOAPS OF CARBOXYLIC ACIDS, AND S-CONTG. REGULATORS OF THE MOL. WT. AND OF THE MOL. WT. DISTRIBUTION. TO IMPROVE THE FROST RESISTANCE OF THE RUBBERS, THE REGULATORS ARE INTRODUCED IN THE FORM OF AN EMULSION OR SUSPENSION CONSISTING OF PRODUCTS OF ALK. SAPON. OF THE REGULATOR SOLN. IN A FATTY ACID. THE EMULSION OR SUSPENSION IS ADDED IN UNEQUAL PORTIONS DURING THE COPOLYM. PROCESS.

UNCLASSIFIED

AA0044234

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

2/70

243680 CABLE LAYING MACHINE digs trenches for cables along an old cable. A track laying motor vehicle pulls a plough. The couplingbetween the plough and the towing motor is pneumatic and it is controlled by radio signals. The level and the direction of ploughing are determined by the relative position of the plough to the cable.

23.3.68 as 1228413/29-14. YA.I.MARCHEVSKI et al(3.10.69) Bul 17/14.5.69. Class 21c. Int.Cl. H 02g.

AUTHORS: Marchevskiy, Ya. I., Furto, G. S., Fishgal, S. I., Balaban, A. S., Pil'ganchuk, P. N., Imereli, V. B., Stepanenko, L. K., Parkhomenko, A. I., Min'kovskaya, S. M., Voznesenskiy, I. A., Vishnyakov, I. Ye., Zinoveyev, A. I., Razumovskiy, O. V., Khrulev, V. V., Politova, A. Ye., Khayzeruk, Ye. M., Smirnov, V. I., Malakhova, V. M.

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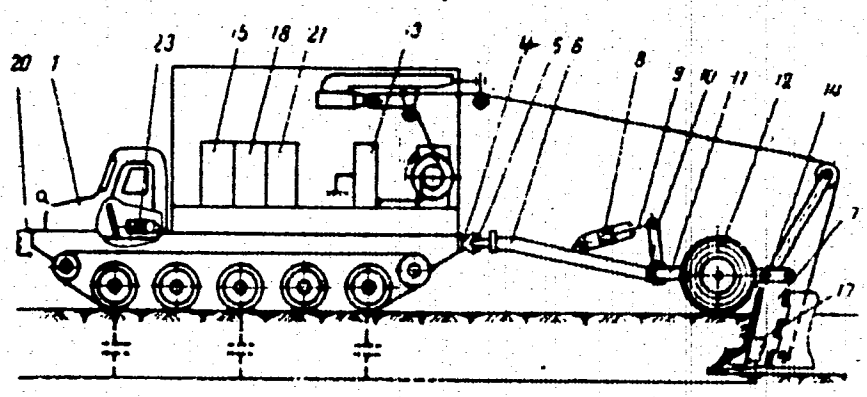
19770733



2/2

USSR UDC: 532.529

KISLER, S.YA. and FISHKIN, B.S.

"On Increasing Range of Concentrations Measured by Electric Contact Dust Counter"

Odessa, 11-ya Vses. Konf. po Vopr. Ispareniya, Goreniya i Gaz. Dinamiki Dispersn. Sistem, 1972 (11-th All-Union Conference on Problems of Evaporation, Combustion and Gas Dynamics of Dispersion Systems, 1972), 1972, p 11-12 (from Referativnyy Zhurnal-Mekhanika, 1973, Abstract No 2B1209)

Translation: The design of a pickup for an electric contact dust counter was developed, it increases considerably the range of concentrations that can be measured without affecting the linear characteristic of the dust counter. With the new pickup design, clean ejecting gas is used to dilute the aerosol, so that the concentration of the mixture in the sensor zone in reduced to the allowable value.

With this pickup design the upper limit of the concentrations that can be measured depends on the allowable flow of ejecting gas. The pickup of the dust

1/2

USSR

KISLER, S. YA. and FISHKIN, B. S., 11-ya Vses. Konf. po Vopr. Ispareniya, Goreniya i Gaz. Dinamiki Dispersn. Sistem, 1972, p 11-12

counter consists of an ejector with helical peripheral nozzles. The mixing chamber of the ejector is confined by the inside surface of the sensor. The current of charges appearing on the sensor which is energized is proportional to the concentration of dispersed phase, with constant flow of aerosol sucked into the ejector. The new pickup design has a short gas-dust travel which decreases the probability of clogging up by dispersed particles. The peripheral nozzles of the ejector made it possible to design it so as to minimize the abrasion of parts affecting the measurement accuracy. A new vibration-proof measuring diagram was used in the above described dust counter.

2/2

USSR UDC 669-419.4:669.71:669.14

FISHKIS, E. YA., KERSHENBAUM, V. YA., and DEMINA, E. L.

"Composition and Properties of the Transition Layers in Aluminum Alloy-Steel Bimetals Produced by Friction Surfacing"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 1, Jan 74, pp 70-71

Abstract: Results are presented from an investigation into the aeffect of different technological modes of hard surfacing as well as cooling rate on composition, structure and thickness of the transition zone. Studies were made on bimetals of antifriction aluminum alloys of the Al-Sb system and steels 10 and 45. The velocity, pressure applied, time at temperature for diffusion processes to occur, and cooling rate are ths ignificant factors in friction surfacing for producing the best bimetallic joint. These factors also have an effect on the thickness of the clad layer and transition zone. From tests of bimetal ASS 6-5 + steel 10 and ASS 6-5 + steel 45 it was determined that the stronger bimetal can be produced at a surfacing velocity of 1.2 m/sec, P = 2 kgf/mm^2, time of 45 seconds and water cooling. This mode produces a transition--zone thickness of 1-10 microns with the better bimetallic joint made using ASS 6-5 + steel 45, although shear tests showed that rupture occurs in the surfacing layer (ASS 6-5). Four figures.
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USSR UDC 621.771+791

FISHKIS, E. YA., DEMINA, E. L., KERSHENBAUM, V. YA., and SHREYBER, G. K., Moscow

"A New Process for Preparing an Aluminum-Steel Bimetal"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 4, Jul/Aug 72, pp 119-122

Abstract: Friction fusing was considered as a possible preparation process for an aluminum-steel alloy. It was shown that in the zone of contact, a migrating layer was formed, the thickness of which was determined by the technological parameters of the fusion process. The most stable compound of steel with aluminum or with an aluminum alloy was obtained when the thickness of this layer was on the order of 1-3 μ. A reliable friction fusion system for producing these alloys is explained.

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USSR UDC 553.41:546.57:543.422

FISHKOVA, N. L., and KAZARINA, T. N., Central Scientific Research Institute of Prospecting for Nonferrous, Rare, and Noble Metals, Moscow

"Atomic-Absorption Determination of Silver in Ores"

Moscow, Zavodskaya Laboratoriya, Vol 37, No 12, 1971, pp 1447 —1449

Abstract : Two methods of determining low silver contents in ores with the help of atomic-absorption spectrophotometry are suggested. The first method is recommended for low-sulfide quartz, quartz-carbonite, and aluminosilicate ores, the second is recommended for sulfide ores of any composition. The first method is based on extraction of complex silver iodide from the hydrochloride medium, the second is based on selective chromatographic separation of silver with the help of cuprenite and its following extraction in the form of diethyldithiocarbamate from the ammonical medium. Atomic-absorption methods with use of extraction concentration permit to determine silver in ores with

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USSR

FISHKOVA, N. L. and KAZARINA, T. M., Zavodskaya Laboratoriya, Vol 37, No 12, 1971, pp 1447-1449

the sensitivity of 0.1 g/ton. The reproducibility error for the silver concentration interval of 0.5 —10 g/ton is characterized by the coefficient of variation 6 %. Two illustr., one table.

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USSR UDC 621.762.2.001

FISHMAN, B. D., SILAYEV, A. F., and VALOV, M. Ye., Siberian Institute of Metallurgy imeni S. Ordzhonikidze, All-Union Institute of Aviation Materials

"Effect of Physical Properties of Metal Melts on Spheroidization of Drops in the Process of Their Crystallization"

Kiev, Poroshkovaya Metallurgiya, No 2 (122), Feb 73, pp 5-8

Abstract: The conditions for the formation of particles of spherical form, when diffusing melts by compressed air, are discussed. A brief analysis is made of existing theories and available practical data of relations between volumetric, thermophysical, and surface properties of substances. To estimate the capacity for spheroidization, it is suggested that a comparison be made between simple substances by the magnitude of the ratio of surface energy and the product of atomic volume and temperature conductivity values. Methods are given for the determination of the spheroidization capacity of particles for binary systems with unlimited mutual solubility, for binary systems containing chemical compounds, and for ternary systems. Three figures, eight formulas, thirteen bibliographic references.

1/1

USSR UDC: 543.422.08

IVANOV, V. P., FISHMAN, I. I., GALYAUTDINOV, N. G.

"Alternating-Current Arc as an Atomizer for Atomic-Absorption Analysis"

Tr. Metrol. In-tov SSSR [Works of Institutes of Metrology, USSR], 1972, No 136(196), pp 29-32 (Translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 12, 1972, Abstract No 12.32.1074, by V. S. K.).

Translation: In order to increase the accuracy of attestation of standard specimens as to content of impurities in petroleum and petroleum products, the most accurate and sensitive methods of analysis must be used, for example spectral atomic absorption analysis. One pressing problem of atomic absorption analysis is the creation of flameless atomizers. This article reports on a newly developed atomizer using an alternating current arc and a stroboscope to filter the natural radiation of the arc. Diagrams and a description of the installation are presented. The device was used with metal and carbon electrodes (E). When carbon E were used, a solution of the element being studied was placed on the end of the lower E, preliminarily saturated with a solution of polystyrene in benzene and dried. Repeated measurements showed good reproducibility of the absorption signal and stability of the

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Ivanov, V. P., Fishman, I. I., Galyautdinov, N. G., Tr. Metrol. In-tov SSSR, 1972, No 136(196), pp 29-32.

absorption signal and stability of the installation against electrical interference. When carbon E are used, interference results from the molecular bands of NO, which is intensively formed in the arc. When the E are placed in a quartz tube with two leads for a neutral gas (such as argon), no interference to the analysis is observed. The use of metal E in atomizers did not yield positive results. 4 figures, 1 table, 3 biblio. refs.

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USSR UDC: 621.315.592

RISBAYEV, T., FISHMAN, I. M., and SHRETER, Yu. G.

"Radiation Recombination at Repelling Centers in GaAs:Cu"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 2003-2005

Abstract: In earlier papers written by the authors named above and published in the same journal (Ryvkin, S. M., et al, 5, 1971, p 1212; Kastal'skiy, A. A., et al, 5, 1971, p 1596) the characteristics of radiation recombinations of unbalanced current carriers in gallium antimonide repelling centers were considered, and it was shown that the Coulomb interaction of a recombining electron and a repelling impurity center completely determines the characteristics of the radiation center. In the present article, the authors investigate radiation recombination at centers whose charge condition is fully known, those centers existing in GaAs mixed with Cu. The specimens in these experiments had concentrations of $n = 2 \cdot 10^{15}/cm^3$ and a mobility of $\mu = 5.5 \cdot 10^3$ $cm^2/V \cdot sec$ at room temperature, and the photoluminescence spectra were obtained at 77° K with the specimens under excitation from a ruby laser with modulated Q. Curves for the experimental results are given. The authors express their

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USSR UDC: 621.315.592

RISBAYEV, T., et al, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 2005-2005

gratitude to S. M. Ryvkin for his encouragement and attention to the work.

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UDC 547.241

USSR

REMIZOV, A. B., KURAMSHIN, I. YA., and FISHMAN, A. I., Kazan' State University Imeni V. I. Ul'yanov-Lenin

"Spectroscopical Study of the Internal Rotation Around the P-C Bond In a Series of Chlorophosphines"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 6, Jun 73, p 1406

Abstract: The IR spectra of the phosphines CH_2ClPCl_2, $C_2H_5PCl_2$ and $(C_2H_5)_2PCl$ show changes in relative intensities of the adsorption bands which appear to depend on the aggregate state and temperature. Analysis of the experimental material led to the conclusion that CH_2ClPCl_2, $C_2H_5PCl_2$ and $(C_2H_5)_2PCl$ exist as rotational isomers in solutions and in liquid state. No indications have been found for rotational isomers of C_2H_5PPhCl.

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USSR UDC: 531.441.3

MIKHAYLICHENKO, A. A., TURKIN, V. F., EISMAN, I. S., Institute of Nuclear Physics, Academy of Sciences of the USSR, Novosibirsk

"A Multichannel Analyzer of Rapidly Alternating Frequencies"

Moscow, Pribory i Tekhnika Eksperimenta, No 3, May/Jun 72, pp 115-118

Abstract: When studying coherent phase instability in accelerators, it is necessary to observe the amplitudes of a rapidly alternating spectrum. The rf voltage applied to the accelerating gap when coherent oscillations arise is modulated by the voltage induced by the beam current. Thus side frequencies appear in the spectrum of the induced voltage across the pickup electrodes. The side frequencies differ from the corresponding harmonics of the rotational frequency by the frequency Ω of small phase oscillations:

$$\Omega^2 = \omega_0^2 \frac{qeKV \sin \varphi_s}{2\pi E_s(t)},$$

where ω_0 is the rotational frequency, q, ϕ, V are the multiplicity, equilibrium phase and amplitude of the accelerating voltage, and $E_s(t)$ is the energy of an equilibrium particle. This paper describes a three-channel

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USSR
MIKHAYLICHENKO, A. A., et al., Pribory i Tekhnika Eksperimenta, No 3, May/Jun 72, pp 115-118

receiver for tracking the side frequencies of coherent phase oscillations $\omega_0 \pm \Omega$, $2\omega_0 - \Omega$ in the B-4 synchrotron. Each channel is a superhet receiver with sweep-driven self-tuning heterodynes. The signal from the pickup or probe is sent by 75-ohm cable through a matched coupler to attenuators which expand the dynamic range of input amplitudes to 60 dB. The signal from the attenuator output is sent to preselectors. The preselectors isolate bands of 36.7-37, 37.5-37.8 and 74-74.3 MHz respectively with a selectivity of about 30 dB. From the preselectors, the signals go to mixers. Here they are mixed with signals from the sweep-driven heterodynes. The heterodyne frequencies vary in accordance with a law given by the controlling voltage proportional to the driving magnetic field. The frequency tuning bands of the heterodynes are equal to the deviation of the side frequencies being studied. A block diagram, schematic and photograph of the receiver are given. The authors thank N. S. Dikanskiy for constructive criticism.

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1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--STEAM GAS TREATMENT OF A POLYCAPROLACTAM MELT FOR THE EXTRACTION OF LOW MOLECULAR WEIGHT COMPOUNDS -U-

AUTHOR-(02)-KOLCHINSKAYA, L.M., FISHMAN, K.YE.

COUNTRY OF INFO--USSR

SOURCE--KHIM. VOLOKNA 1970, (2), 69-71

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CAPROLACTAM, FLUID VISCOSITY, HYDROLYSIS, THERMAL DEGRADATION, SOLVENT EXTRACTION, CHEMICAL SEPARATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0749 STEP NO--UR/0183/70/000/002/0069/0071

CIRC ACCESSION NO--AP0119656

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119656

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONTENT OF LOW MOL. WT. COMPOUNDS IN POLYCAPROLACTAM (I) MELTS WAS REDUCED BY SHORT TERM EXTN. (SIMILAR TO 0.5 HR) WITH STEAM, H, AND STEAM N MIXTS. AT 265-400DEGREES. WITH LONGER EXTN. TIMES, THE CONTENT OF LOW MOL. WT. COMPDS. AGAIN INCREASED ALTHOUGH THE I RELATIVE VISCOSITY (1PERCENT IN H SUB2 SO SUB4) CHANGED LITTLE. VISCOSITY INCREASED FASTER AND TO A GREATER EXTENT BY TREATING MELTS WITH N OR 1:3 STEAM N MIXTS. THAN WITH STEAM OR 3:1 STEAM N MIXTS. BECAUSE THE HIGHER WATER CONTENT OF THE LATTER PROMOTED HYDROLYSIS AND THERMAL DEGRADATION OF I.

UNCLASSIFIED

USSR

KOSTYLEV, V. A. et al., Vopr. dozimetrii i zashchity ot izluch., vyp. 12, Moscow, Atomizdat, 1971, pp 179-186

method of steep ascent on the BESM-4 was used in determining the maximum of the quality factor of the collimator as a function of its parameters. Parameters are presented for a universal focusing ring collimator constructed on the basis of these calculations. M. L.

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Biophysics

USSR

FISHMAN, S. N., CHERNEYKIN, V. A., and VOL'KENSHTEYN, M. V., Institute of Molecular Biology, Academy of Sciences USSR, Moscow

"Molecular Mechanism of the Initiation of Muscle Contraction"

Moscow, Biofizika, No 6, 1972, pp 1,061-1,067

Abstract: The authors propose a mathematical model that describes the kinetics of muscle fiber response to the application of depolarizing potential to the membrane. The model assumes that the development of isometric contraction is limited to two main reactions: (a) desorption of Ca^{++} from the reticulum due to the charge in the electrical field and (b) formation of an actomyosin bridge and subsequent conformation change in protein. The behavior of the model system in time is examined in three situations: (a) after the application of fixed potential to the membrane, (b) after brief polarization of the membrane, and (c) after stimulation of the muscle fiber by a series of short impulses (tetanus).

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USSR

ELSHMAN, S. N., KHODOROV, B. I., and BOL'KENSHTEYN, M. V., Institute of Molecular Biology, Academy of Sciences, USSR, Moscow; Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences, USSR, Moscow

"Molecular Mechanisms of Changes of the Ionic Permeability of an Electrically Excitable Membrane. II. Model of the Activation Process"

Moscow, Biofizika, Vol 17, No 4, 1972, pp 611-617

Abstract: A model of activation of the Na-conductivity of an excitable membrane during a positive shift of the membrane potential is considered. This model assumes that activating particles exist in the membrane and that due to the effect of the field, these particles undergo a transformation related to the charge displacement. This transformation also brings about a change in the number of calcium ions sorbed by the membrane from solution. By means of the model, it becomes possible to explain the shape of the curve of the relationship of the peak Na-conductivity to the potential on the membrane, the value of the shift of this curve along the voltage axis with a change of the Ca^{++} concentration in the surrounding solution. The model also permits explanation of the influence of an increase of $(Ca)_0$ upon kinetic effects, such as retardation of the growth rate of membrane conductivity $g_{Na}(t)$ during membrane depolarization, and an acceleration of the rate of decrease of $g_{Na}(t)$ during repolarization.

1/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--THEORY OF TRANSPORT PHENOMENA IN BIOLOGICAL MEMBRANES -U-

AUTHOR-(02)-VOLKENSHTEYN, M.V., FISHMAN, S.N.

COUNTRY OF INFO--USSR

SOURCE--BIOFIZIKA 1970, 15(1), 31-7

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CELL MEMBRANE, SODIUM COMPOUND, POTASSIUM COMPOUND, LIPOPROTEIN, BIOPOTENTIAL, ION EXCHANGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0631 STEP NO--UR/0217/70/015/001/0031/0037

CIRC ACCESSION NO--AP0117857

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0117857
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MECHANISM OF PASSIVE AND ACTIVE MIGRATIONS OF NA PRIME POSITIVE AND K PRIME POSITIVE IN BIOL. MEMBRANES IS PROPOSED. THE PASSIVE MIGRATION IS CAUSED BY THE ELECTROCHEM. POTENTIAL GRADIENT OF K PRIME POSITIVE AND NA PRIME POSITIVE, WHEREAS THE ACTIVE MIGRATION IS CAUSED BY THE ELECTROCHEM. POTENTIAL GRADIENT OF A COMPLEX OF NA PRIME POSITIVE OR K PRIME POSITIVE WITH A LIPOPROTEIN. THE MIGRATIONS TAKE PLACE IN ION EXCHANGE CENTERS SITUATED IN THE MEMBRANE. THE PASSAGE OF K PRIME POSITIVE AND NA PRIME POSITIVE FROM ONE CENTER TO ANOTHER IS A METABOLIC ENZYMIC REACTION. FACILITY: INST. MOL. BIOL., MOSCOW, USSR.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--THE THEORY OF TRANSPORT PHENOMENA IN BIOLOGICAL MEMBRANES: II. THE ACTIVE TRANSPORT OF IONS -U-

AUTHOR-(02)-VOLKENSTEIN, M.V., FISHMAN, S.N.

COUNTRY OF INFO--USSR

SOURCE--BIOCHIM BIOPHYS ACTA 203(1): 10-16. ILLUS. 1970.

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TRANSPORT PHENOMENON, SODIUM, POTASSIUM, ENZYME

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605013/F07 STEP NO--NE/0000/70/203/001/0010/0016

CIRC ACCESSION NO--AP0140439

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820001-6"

2/2 019 UNCLASSIFIED PROCESSING DATE--04DEC76

CIRC ACCESSION NO--AP0140439

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MODEL IS SUGGESTED COUPLING THE PROCESSES OF THE PASSIVE AND ACTIVE TRANSPORT OF THE NA PRIME POSITIVE AND K PRIME POSITIVE IN BIOLOGICAL MEMBRANES. IT IS SHOWN THAT THE MECHANISM OF ACTIVE TRANSPORT HAS FEATURES COMMON TO THE MECHANISM OF PASSIVE TRANSPORT. HOWEVER, IT DIFFERS IN THE DRIVING FORCE MAINTAINING THE DIRECTED FLOW OF IONS. IN THE CASE OF PASSIVE TRANSPORT, THE DRIVING FORCE IS THE GRADIENT OF ELECTROCHEMICAL POTENTIAL OF THE IONS OF GIVEN SPECIES; IN THE CASE OF ACTIVE TRANSPORT IT IS THE GRADIENT OF THE POTENTIAL OF THE COMPLEX RESULTING FROM THE BIOCHEMICAL REACTION. THE SPECIFIC FEATURE OF ACTIVE TRANSPORT IS THE COOPERATIVITY OF ENZYMATIC EXCHANGE REACTION, DETERMINING THE TRANSMISSION OF IONS FROM ONE CENTER TO ANOTHER. FACILITY: INST. MOL. BIOL., ACAD. SCI. USSR, MOSCOW, USSR.

UNCLASSIFIED

1/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--THE THEORY OF TRANSPORT PHENOMENA IN BIOLOGICAL MEMBRANES: I. THE PASSIVE TRANSPORT AND RESTING POTENTIAL -U-
AUTHOR-(02)-VOLKENSTEIN, M.V., FISHMAN, S.N.

COUNTRY OF INFO--USSR

SOURCE--BIOCHIM BIOPHYS ACTA 203(1): 1-9. ILLUS. 1970.

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SODIUM, POTASSIUM, TRANSPORT PHENOMENON, ION EXCHANGE, THERMODYNAMIC PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605013/F07 STEP NO--NE/0000/70/203/001/0001/0009

CIRC ACCESSION NO--AP0140440

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140440

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THEORETICAL STUDY OF THE PASSIVE TRANSPORT OF NA PRIME POSITIVE AND K PRIME POSITIVE ACROSS BIOLOGICAL MEMBRANES IS BASED ON THE ASSUMPTION THAT BOTH KINETIC AND THERMODYNAMIC PROPERTIES OF MEMBRANE INFLUENCE THE FLUX OF IONS. TWO MODELS WERE INVESTIGATED. MODEL A SUGGESTS THE EXISTENCE OF 2 KINDS OF ION EXCHANGE CENTERS, 1 BINDING MAINLY NA PRIME POSITIVE AND THE OTHER MAINLY K PRIME POSITIVE. MODEL B SUGGESTS ONLY 1 TYPE OF ION EXCHANGE CENTER WITH A DIFFERENT AFFINITY TO NA PRIME POSITIVE AND TO K PRIME POSITIVE. ONLY MODEL A PROVIDES THE EQUATION WHICH AGREES WITH EXPERIMENTAL DATA CONCERNING THE DEPENDENCE OF RESTING POTENTIAL ON CONCENTRATION. FACILITY: INST. MOL. BIOL., ACAD. SCI. USSR, MOSCOW, USSR.

UNCLASSIFIED

USSR

FISHMAN, S. N., CHERNEYKIN, V. A., and VOL'KENSHTEYN, M. V., Institute of Molecular Biology, USSR Academy of Sciences, Moscow

"Role of Ion Exchange Processes in the Mechanism of Altered Na Permeability of Excitable Membranes"

Moscow, Biofizika, Vol 18, No 5, Sep/Oct 73, pp 834-838

Abstract: Experimental studies have led to the conclusion that pores of excitable membranes may exist in a state which is permeable to Na, as well as impermeable. In the impermeable state they can bind Ca. It is now suggested that yet another state of the pores may exist in which Ca is replaced by K, the extent of which depends on K concentration in the incubate. From the latter state the pores may become permeable to Na. In essence, an electrochemical gradient may be established along which the positive ions are conducted.

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USSR

VOL'KENSHTEYN, M. V. and FISHMAN, S. N., Institute of Molecular Biology, Academy of Sciences USSR

"Theory of Transport Phenomena in Biological Membrane. II. Active Ion Transport"

Moscow, Biofizika, No 1, 1970, pp 31-37

Abstract: The authors propose a model that involves both the passive and the active transport of sodium and potassium ions in biological membranes. The mechanism of active transport is shown to have features in common with the mechanism of passive transport. It differs, however, in the force that ensures the directed movement of ions (it is the gradient of electrochemical potential of the particular type of ion in passive transport, whereas it is the gradient of potential of the complex created by the biochemical reaction in active transport) as well as in the cooperative nature of the metabolic enzyme reaction by which ions are transported from one center to another.

USSR

UDC 669.25:669.017.3

BOKSHTEYN, S. Z., LYUTISAU, V. G., RAZUMOVSKIY, I. M., SVETLOV, I. L., and FISHMAN, Yu. M., All-Union Scientific Research Institute of Aviation Materials

"Martensitic Transformation in Cobalt Whiskers"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 33, No 6, Jun 72, pp 1277-1284

Abstract: An x-ray investigation was made of the phase composition and dislocation structure of cobalt whiskers grown by $CoBr_2$ reduction at 720-760°C. The structures of whiskers in which an incomplete martensitic transformation occurred and the structures of whiskers with mixed phase composition are imperfect. Dislocations with the Burger vector b=1/3<111> lying in planes parallel to the habitus plane in transformation were found in crystals of these whiskers. In whiskers with a mixed phase composition, the dislocations are concentrated in regions retaining the high-temperature modification with a centered cubic structure. Obviously, martensitic transformations can occur in ideal crystals, but structural defects prevent the transformation development according to the martensitic mechanism. Three figures, fourteen bibliographic references.

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USSR

GRINCHENKO, T. A., DORODNITSYNA, A. A., KLIMENKO, V. P., FISHMAN, Yu. S.

"The MIR-2 System of Computer Analytic Transforsm"

Vychisl. Mat. i Vychisl. Tekhn. [Computer Mathematics and Computer Technology -- Collection of Works], No 3, Khar'kov, 1972, pp 21-25 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V647, by the authors).

Translation: Certain functional peculiarities of the MIR-2 system of analytic transforms and principles of its machine realization are presented.

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USSR

UDC: 8.74

POGREBINSKIY, S. B., FISHMAN, Yu. S.

"Dialogue System for Analytic Solution of Certain Problems of Linear Algebra"

Teoriya Yazykov i Metody Postroyeniya Sistem Programmir. [Theory of Languages and Methods of Construction of Programming Systems--Collection of Works], Kiev-Alushta, 1972, pp 329-337 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V561)

Translation: A dialogue system for analytic solution of certain problems in linear algebra is described. The process of problem solving in the dialogue mode is defined by a sequence of directives which the human operator inputs by typewriter. The directives contain the minimum of information necessary for operation of the corresponding program and by switching control to the program. There are seven such programs in all. The characteristics of these programs are presented. The first program forms a file of coefficients. The second program performs linear combination. The third program performs redefinition. The fourth and fifth programs exclude the unknown and change the nature of the sequence of operation. The sixth program switches schemes during expansion of determinants or the order of unknown systems of linear equations. The seven-

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-USSR-

Pogrebinskiy, S. B., Fishman, Yu. S., Teoriya Yazykov i Metody Postroyeniya Sistem Programmir., Kiev-Alushta, 1972, pp 329-337

program shifts rows. An example of solution of an actual fifth order system is presented.

1/2 019 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--A SUMMARY OF THE RESULTS OF SURGICAL TREATMENT OF THE CARDIAC AND MAJOR VESSELS IN THE CAUCASUS MINERAL WATERS -U-

AUTHOR-(05)-TOSHINSKIY, I.I., BOGOYEV, D.N., KUPTSOV, KH.N., FISHOVA, R.Z., ABANICHEV, N.I.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK KHIRURGII IMENI I. I. GREKOVA, 1970, VOL 104, NR 3, PP 25-32

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SURGERY, CIRCULATORY SYSTEM, HEART, BLOOD VESSEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0951 STEP NO--UR/0589/70/104/003/0025/0032

CIRC ACCESSION NO--AP0102812

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--02OCT70
CIRC ACCESSION NO--AP0102812
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS PRESENT THE ANALYSIS OF THEIR EXPERIENCE WITH 984 OPERATIVE PROCEDURES PERFORMED ON THE HEART AND LARGE VESSELS IN THE HOSPITAL OF THE PYATOGORK CITY.

UNCLASSIFIED

USSR Oscillators and Modulators UDC: 621.373

FISHTEYN, A. M.

"Transistorized Nanosecond Pulse Oscillator"

Moscow, Pribory i Tekhnika Eksperimenta, No. 3, 1971, pp 106-107

Abstract: A pulse generator and pulse shaper is described. It produces pulses with an amplitude of up to 40 volts and a leading edge of 5-7 ns in width, or pulses of about 20 volts in amplitude and 1-30 ns wide, with a leading edge of less than 1 ns. The schematic of the instrument is seen to consist of two sections: a monovibrator with a tunnel diode and a transistor amplifier, and a diode shaping circuit. For the 40-volt pulse, the output is picked off at a point before the shaping circuit; for the pulse with shorter leading edge or lesser duration, the output is taken off the pulse shaper load. The generator is triggered by a negative input current pulse with an amplitude of 0.5 ma. It was designed for triggering power circuits with a relaxation oscillator containing a secondary-emission tube, especially if the input signal is brought to the circuit through a cable. The author is associated with the Physical Institute of the USSR Academy of Sciences, Siberian Department, at Krasnoyarsk.

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USSR UDC: 621.373.431

FISHTEYN, A. M.

"Two Generators of Pulses With Nanosecond Fronts"

V sb. Tonkiye magnitn. plenki, vychisl. tekhn. i radiotekhn. T. 1 (Thin Magnetic Films, Computer Technology and Radio Engineering--collection of works. Vol. 1), Krasnoyarsk, 1970, pp 100-104 (from RZh-Radiotekhnika, No 2, Feb. 71, Abstract No 2G228)

Translation: The article describes two oscillator circuits designed for creating a pulse magnetic field with an amplitude of up to 30 oersteds. The field reproduces the shape of the current pulse in a strip line. One of the circuits produces pulses with a duration of 0.5-10 msec with rise time of 2-3 nsec; the corresponding figures for the other circuit are 50-500 nsec with a rise time of 1.5-2 nsec. Both circuits are based on vacuum tubes. Bibliography of two titles. N. S.

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USSR
FISHTEYN, A. M.

UDC 621.374.34

"A Possibility for Decreasing the Nonuniformity of Phase-Amplitude Characteristic of an Amplifier-Limiter"

Izvestiya sibirskogo otdeleniya Akademii Nauk SSSR, seriya tekhnicheskikh nauk, No 8 (203), vyp. 2, June 1972, pp 111-117

Abstract: A study was made of the possibilities of using diodes the switching time of which is in a defined ratio to the time constant of the transient characteristic of an amplifying cascade to improve the phase-amplitude characteristic of the individual cascade of an amplifier-limiter and improve the phase-amplitude characteristicsof the multicascade amplifier-limiter. The phase-amplitude characteristics of the amplifier-limiter are improved on satisfaction of the expressions

$$0.7\omega\tau_{const} + \omega\tau_d = \omega\tau_{const},$$

for $t_0 \ll \tau_{const}$ where ω is the angular frequency of the signal, τ_{const} is the time constant of the cascade, τ_d is the switching time of the diodes. The phase-amplitude shifts of the multicascade amplifier-limiter do not exceed $0.21\omega\tau_{const}$ independently of the number of cascades, that is, in any range of input signal levels. A mathematical analysis and graphs are presented

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FISHTEYN, A. M., Izvestiya sibirskogo otdeleniya Akademii Nauk SSSR, Seriya tekhnicheskikh nauk, No 8 (203), vyp. 2, June 1972, pp 111-117

demonstrating the effectiveness of the indicated method of correcting the phase-amplitude characteristics of an amplifier-limiter.

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1/2 027 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--MILITARY CYBERNETICS -U-

AUTHOR--RYABCHUK, V., FISHTIK, L.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIO, NO 2, FEB 70, PP 7-9

DATE PUBLISHED----FEB70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, ELECTRONICS AND ELECTRICAL ENGR., MILITARY SCIENCES

TOPIC TAGS--CYBERNETIC CONTROL, MILITARY OPERATION, ARMED FORCES LOGISTICS, COMPUTER APPLICATION, AIR DEFENSE SYSTEM, COMMAND AND CONTROL, MISSILE COMMAND AND CONTROL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1419 STEP NO--UR/0107/70/000/002/0007/0009

CIRC ACCESSION NO--AP0104733

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0104733

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS PAPER IS A VERY GENERAL NON TECHNICAL DESCRIPTION OF THE ROLE PLAYED BY MILITARY CYBERNETICS. NO SPECIFIC EQUIPMENT OR SYSTEM IS MENTIONED. ACCORDING TO THE AUTHORS, AT THE PRESENT TIME, THE BASIS OF MILITARY CYBERNETICS CONSISTS OF: 1) THE THEORY OF MILITARY INFORMATION; 2) MILITARY OPERATIONS RESEARCH THEORY (OPERATIONS RESEARCH THEORY APPLIED TO AN INVESTIGATION OF SPECIFIC PROBLEMS); AND 3) THE THEORY OF COMPUTERS FOR MILITARY PURPOSES AND THE THEORY OF AUTOMATIZATION OF CONTROL OF TROOPS AND COMBAT MEANS. ELECTRONIC COMPUTERS ARE AN IMPORTANT ELEMENT OF THE LAND BASED AIRDEFENSE SYSTEM, IN PARTICULAR CONTROLLED ANTIAIRCRAFT ROCKETS. IN THE FLEET, ELECTRONIC COMPUTERS SOLVE PROBLEMS OF THE LOCATION AND CLASSIFICATION OF NAUTICAL TARGETS, AND WORK OUT DATA FOR USE BY WEAPONS. THEY PLAY AN IMPORTNAT ROLE IN THE SAFETY OF NAVIGATION. AUTOMATIZATION OF THE INDIVIDUAL CONTROL PROCESSES ALONE DOES NOT COMPLETELY SOLVE THE PROBLEM OF INCREASING THE EFFECTIVENESS OF CONTROL OF TROOPS. CONSEQUENTLY, MILITARY RESEARCHERS HAVE REACHED THE CONCLUSION THAT AN ABRUPT INCREASE IN THE EFFECTIVENESS OF CONTROL OF TROOPS IS POSSIBLE ONLY ON THE BASE OF THE CREATION OF AN AUTOMATIZED SYSTEM OF TROOP CONTROL.

UNCLASSIFIED

1/2 042 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--USE OF MASTICS BASED ON FURYL RESINS -U-

AUTHOR-(03)-KUTSENOK, B.I., FISKINA, R.YA., GILMAN, TS.I.

COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (2), 60-1

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--PHYSICAL CHEMISTRY PROPERTY, CHEMICAL STABILITY, ADHESIVE, PROTECTIVE COATING, PLASTIC COATING, QUARTZ, GRAPHITE, MERCURY, CONCRETE, CERAMIC, CHLORINATED ORGANIC COMPOUND/(U)FL2 PROTECTIVE COATING, (U)F8 PROTECTIVE COATING, (U)F10 PROTECTIVE COATING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1694 STEP NO--UR/0191/70/000/002/0060/0061

CIRC ACCESSION NO--AP0112688

UNCLASSIFIED

2/2 042 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0112688

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHEM. STABILITY OF FL-2 MASTIC (I) (PREPD. FROM A FURYL RESIN FL-2), F-8 MASTIC, AND F-10 MASTIC (FILLED WITH FINELY DIVIDED QUARTZ OR GRAPHITE) WAS TESTED IN VARIOUS CORROSIVE MEDIA. I, HARDENED IN THE PRESENCE OF 6-10PERCENT P-CLC SUB6 H SUB4 SO SUB3 H AT ROOM TEMP., EXHIBITED EXCELLENT PHYSICOMECH. AND CHEM. PROPERTIES. OPTIMUM COMPN. AND PROCESSING CONDITIONS OF I WERE DETD. A 7 YEAR STUDY SHOWED THAT I COATINGS EFFECTIVELY PROTECTED CONCRETE FLOORS AND CERAMIC WALLS FROM THE CORROSIVE EFFECTS OF NA SUB2 S SUB2 O SUB4, NA SUB2 SO SUB3, NAOH, H SUB2 SO SUB4, AND H SUB2 O AT 40DEGREES. THUS, I AND ASBOVINIL MODIFIED WITH AN FL-2 RESIN CAN BE USED AS CHEM. RESISTANT AND HG PROOF MATERIALS.

UNCLASSIFIED

Higher Algebra & Geometry and Topology

USSR

UDC 510

FISKOVICH T. T.

"The General and the Specific in Understanding the Essence of Geometry"

V sb. Mat. i nekotor. yeye prilozh. v teor. i prikl. yestestvozn. (Mathematics and Some of Its Applications in Theoretical and Applied Natural Science -- Collection of Works), vyp. 4, Rostov on Don, 1970, pp 63-72 (from RZh-Matematika, No 2, Feb 72, Abstract No 2A47 by B. ROZENFEL'D)

Translation: This is a methodological article dealing with the use of polar transformations relative to a circle in the geometry course of a pedagogical institute, which is used as an example to elucidate the interaction of the "general" (pertaining to projective properties of figures) and the "specific" (pertaining to Euclidian geometry) in geometry.

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SPRS 57208
6.72

FISTUL', V.I.

X-6b. APPLICATION OF ELECTRON SOUNDING MICROANALYSIS TO INVESTIGATE SEMICON-DUCTOR SOLID SOLUTIONS OBTAINED BY THE METHOD OF CAPACITIVE EPITAXY

[Article by T. A. Ukhorskaya, F. A. Gimel'farb, L. M. Dolginov, V.I. Fistul', Moscow; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 197?, p 136]

The method of electron sounding microanalysis was used to study the peculiarities of the distribution of the basic components with respect to thickness of layers of semiconducting solid solutions of $A^{III}B^{V}-A^{III}B^{V}$ and $A^{III}B^{V}-A^{II}B^{VI}$ obtained by the method of liquid epitaxy (GaAs-AlAs, InP-GaP, GaAs-ZnSe, and so on). The procedural possibilities of the local x-ray spec-tral and microcathode luminescence analyses for studying the growth process of semiconductor crystals and films were demonstrated. The temperature func-tions as the variation of the distribution coefficients of the components be-tween the solid phase and liquid phase obtained by the results of x-ray spec-tral and cathode luminescence measurements agree well with the theoretical curves. The simultaneous recording of the x-ray and optical spectra in micro-volumes on the order of several microns^3 permitted investigation of the laws of variation of the physical parameters, in particular, the width of the for-bidden zone along with the distribution laws of the components in the epitax-ial layers.

V.I.

FISTUL', V. I.

JPRS 59208

6-73

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X-6n. STUDY OF THE DISTRIBUTION OF ADMIXTURES IN THIN EPITAXIAL SEMICONDUCTOR LAYERS BY THE ION MICROANALYSIS METHOD

prob. V.I.

[Article by P. B. Orlov, F. A. Gimel'farb, V. M. Fistul', Moscow; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 133]

The method of ion microanalysis was used to study the distribution of the acceptor admixtures of the IIIB subgroup of the periodic system in silicon layers less than 5 microns thick obtained by gas epitaxy and the distribution of amphoteric admixtures of subgroup IVB in thin layers of GaAs and $Ga_xAl_{1-x}As$. In the example of these specimens, the possibilities of using the secondary ion emission spectra to investigate the distribution laws of the admixtures with respect to depth of the thin layers with a resolution of 100 Å are demonstrated. The effect of the crystallization conditions and the type of alloying admixture on the shape of the concentration profiles and also on the electrical properties of the silicon epitaxial layers and on the luminescent properties of the epitaxial layers of GaAs and $Ga_xAl_{1-x}As$ is demonstrated.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820001-6"

USSR

UDC 621.315.592

ANDRIANOV, D. G., SAVEL'YEV, A. S., FISTUL', V. I., State Scientific Research and Planning and Design Institute of the Rare Metals Industry of Moscow

"Magnetic Susceptibility of Gallium Arsenide Strongly Alloyed with Tellurium"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 5, 1972, pp 853-857

Abstract: The experimental setup and results are presented from an investigation of the magnetic susceptibility of gallium arsenide alloyed with tellurium in the concentration range from $3 \cdot 10^{17}$ to $1.4 \cdot 10^{19}$ cm -3. The measurements were taken by the Faraday method in the temperature range of 4.2-300°K. The existence of paramagnetic centers was detected in the low-temperature range near the temperature of liquid helium, although the investigated samples did not contain impurity atoms with unclosed d or f-shells. The paramagnetism was temperature-dependent and caused by the presence of the admixture atoms. The concentration of the magnetic centers as a function of the Hall concentration of the charge carriers is described by a curve with peaks. Curves are presented showing the dependence of the number of paramagnetic centers on the degree of alloying and the effect of the nature of the impurity in the Te, Se and S series on the negative reluctance in GaAs. Heat treatment converting the tellurium atoms to different states in the crystal lattice also changes the concentration of the paramagnetic centers.

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USSR

UDC 621.315.592

ANDRIANOV, D.G., BRANDT, N.B., ICON, E.R., FISTUL', V.I., CHUDINOV, S.M.

"Shubnikov--De Haas Effect In Heavily Doped N-Type GaAs"

Fizika i tekhnika poluprovodnikov, Vol 5, No 12, Dec 1971, pp 2285-2291

Abstract: The oscillations of the magnetoresistance of n-type GaAs doped with Te are studied in the interval of concentrations n_H of electrons from $0.93 \cdot 10^{18}$ to $2.75 \cdot 10^{10}$ cm^{-3} in magnetic fields to 70 kilooersted at temperatures of $1.9 \div 4.2^{\circ}$ K. Anisotropy of the isoenergetic surface at a point Γ of the Brillouin zone is revealed, increasing with an increase of the concentration of electrons. With $n_H = 2.75 \cdot 10^{18}$ cm^{-3} the relative anisotropy of the extremal cross-sections of the isoenergetic surface amounts to ~ 2 percent. A break is observed in the dependences of the number of Landau levels on the magnitude of the reversed magnetic field, which is interpreted as a consequence of the two-sheeted structure of the isoenergetic surface at a point Γ and of the intraband magnetic breakdown between the two cross-sections of this surface which are similar with respect to area. The Dingler temperature, the cyclotron masses, the Hall mobility, and the Dingler mobility are determined. State Scientific-Research And Planning Institute Of The Rare Metal Industry, Moscow (Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti, Moskva); Moscow State University imeni M.V. Lomonosova. Received by editors 31 March 1971. 6 fig. 2 tab. 11 ref.

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USSR

UDC 541.12.012.2

ANDRIANOV, D. G., OBUKHOV, YU. V., FIRSOV, V. G., FISTUL', V. I., State Scientific Research and Development Institute of Rare Metal Industry, Institute of Theoretical and Experimental Physics, Moscow

"Dimensions of the Hydrogen Atom in Semiconductors and Dielectrics"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 4, Dec 71, pp 884-886

Abstract: A theoretical discussion based on literature reports is carried out in an attempt to find correlations between the Si-H and Ge-H bond characteristics and dimensions of atomic μonium and atomic hydrogen (both by physical and chemical properties an atom of μonium is like a hydrogen atom). No original experimental work is reported. It is believed that the μonium (and consequently the atomic hydrogen) are located in the internodal spaces of the crystalline lattice of germanium and silicon. The μonium was found to have a decreased energy of superfine interactions which is believed to be due to its interaction with neighboring atoms in the crystalline lattice -- evidently the μonium electron belongs for a certain time concurrently to the μ^+-meson and to the ligand. Geometrical characteristics of the internodal spaces in which the μonium and hydrogen are located in the

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ANDRIANOV, D. G., et al., Doklady Akademii Nauk SSSR, Vol 201, No 4, Dec 71, pp 884-886

Ge and Si lattices are about the same, analogously to the Ge-H, Si-H bond lengths. If the interaction of μonium with the ligands of silicon and germanium lattice resembles the interaction during formation of Si-H and Ge-H bonds, it is reasonable to expect that the μonium should be larger in the silicon lattice than in the germanium lattice. A conclusion is reached that the radius of hydrogen dissolved in silicon should be somewhat larger than in germanium.

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1/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--CHEMICAL HETEROGENEITY OF EPITAXIAL LAYERS OF GALLIUM PHOSPHIDE GALLIUM ARSENIDE SOLID SOLUTIONS -U-

AUTHOR-(05)-GIMELFARB, F.A., KISTOVA, YE.M., MASLOV, V.N., SAKHAROV, B.A., FISTUL, V.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER., 1970, 6(3), 461-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--GALLIUM, PHOSPHIDE, ARSENIDE, SOLID SOLUTION, EPITAXIAL GROWTH, SPECTROSCOPY, SINGLE CRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/1344 STEP NO--UR/0363/70/006/003/0461/0467

CIRC ACCESSION NO--AP0121837

UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121837

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REASONS FOR THE EMERGENCE AND THE METHODS OF ELIMINATION OF CHEM. HETEROGENEITY OF GAP SUBX AS SUB1 NEGATIVEX SINGLE CRYSTALS WERE INVESTIGATED. THE CRYSTALS WERE GROWN BY THE SANDWICH METHOD ON GAAS SUBSTRATES WITH (111) ORIENTATION, BY USING A POWD. SOURCE PLACED 0.5 MM FROM THE SUBSTRATE. THE TRANSFER WAS ACCOMPLISHED IN A MOIST H ATM. AT AN AV. TEMP. OF 930-500DEGREES. THE GROWTH RATE WAS 10-20 MU,HR. THE DISTRIBUTION HETEROGENEITY OF THE FUNDAMENTAL COMPONENTS OF THE GAP-GAAS SOLID SOLN. WAS DETERMINED BY LOCAL X RAY SPECTROGRAPHIC ANAL. FOR SOLID SOLNS. WITH GAAS PREDOMINANT, THE HETEROGENEITY SHOWS UP PRIMARILY BECAUSE OF THE NONHOMOGENEITY OF THE SOURCE, AND CAN BE ELIMINATED BY HOMOGENIZATION. AT A HIGH GAP CONTENT, A MORE SIGNIFICANT EFFECT IS EXERTED ON THE UNIFORMITY OF THE CRYSTALS BY LATERAL GAS ETCHING OF THE GAAS SUBSTRATE, WHICH CAN BE REDUCED TO A MIN. BY MASKING THE SUBSTRATE, WITH THE EXCLUSION OF THE SECTION INTENDED FOR GROWING THE EPITAXIAL LAYER. PRIOR HOMOGENIZATION OF THE SOURCE AND THE MASKING OF THE SUBSTRATE ARE THE NECESSARY CONDITIONS FOR THE ELIMINATION OF CHEM. HETEROGENEITY OF SINGLE CRYST. LAYERS OF GAP-GAAS SOLID SOLNS. DURING EPITAXIAL GROWTH BY THE SANDWICH METHOD.

UNCLASSIFIED

Acc. Nr: AP0018473

Abstracting Service: CHEMICAL ABST. 5/70

Ref. Code: 4R0070

F

104741v Disturbance of the homogeneity of gallium arsenide crystals during growth from melts of nonstoichiometric composition. Gimel'farb, F. A.; Lainer, B. D.; Mil'vidskii, M. G.; Fistul, V. I. (USSR). *Kristallografiya* 1970, 15(1), 201–2 (Russ). By local x-ray diffraction spectroscopy, the formation was studied of other phases in the prepn. of Ga arsenide single crystals from the melt of compn. 49–51 at. % As. From melts contg. excess Ga, inclusions contg. 85–90% Ga, 0–4.1% As, and O were obsd. In excess As, pores with a slight excess of As on the walls and compact inclusions contg. 94–96% As and 5.1–3.4 Ga were found. The size of the inclusions was ~200 μ max., and the content of Ga was only slightly higher than in the eutectic mixt. GaAs–As. The origin of these inclusions is discussed.

K. Volka

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REEL/FRAME 19800181

18

1/2 031 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--HEAT TREATMENT TRANSFORMATIONS IN GALLIUM ARSENIDE STRONGLY DOPED WITH TELLURIUM -U-

AUTHOR-(04)-GRISHINA, S.P., MILVIDSKIY, M.G., OSVENSKIY, V.B., FISTUL, V.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 294-8

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--METAL HEAT TREATMENT, GALLIUM ARSENIDE, DOPED ALLOY, TELLURIUM, HALL CONSTANT, CRYSTAL DISLOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0940 STEP NO--UR/0449/70/004/002/0294/0298

CIRC ACCESSION NO--AP0116448

UNCLASSIFIED

2/2 031 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0116448
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TE DOPED GAAS SINGLE CRYSTALS DOPED WITH SUFFICIENT TE TO GIVE A CHARGE CARRIER CONCN. OF (7-10) TIMES 10 PRIME18-CM PRIME3 AND DISLOCATION D. SIMILAR TO 10 PRIME3-CM PRIME2 WERE GROWN BY THE CZOCHRALSKI METHOD. THE HEAT TREATMENT WAS CARRIED OUT IN EVACUATED QUARTZ AMPULS. THE CARRIER D. AND MOBILITY WERE DETD. FROM HALL COEFF. AND COND. MEASUREMENTS OF CROSS SHAPED SAMPLES. ANNEALING WAS PERFORMED AT 700-1000DEGREES AFTER TEMPERING AT 1100DEGREES. FOLLOWING THE TEMPERING PROCEDURE ALL SAMPLES SHOWED AN 40-60PERCENT INCREASE OF ELECTRON CONCN. A GENERAL DECAY OF N SUBE IS OBSERVED THROUGHOUT THE ENTIRE ANNEALING PROCESS (SIMILAR TO 100-150 HRS.) AT EACH ANNEALING TEMP. THE INITIAL N SUBE VALUE PRIOR TO TEMPERING IS REACHED WITHIN 20 MIN DURING THE ANNEALING PROCESS REGARDLESS OF TEMP. AT HIGHER COOLING RATES AS THOSE MET UNDER USUAL CRYSTN. CONDITIONS THE IMPURITIES REDISTRIBUTION CANNOT PROCEED, AND THE CRYSTAL REMAINS IN A METASTABLE STATE. THE DECAY OF N SUBE DURING ANNEALING IS ATTRIBUTED TO A TRANSITION OF PART OF THE TE ATOMS INTO INTERSTITIAL POSITIONS OR TO AN INCLUSION INTO A SECOND PHASE. A DECREASE IN ELECTRON MOBILITY IS CAUSED BY THE ANNEALING PROCESS. IT IS ASSUMED THAT TE ATOMS IN THE SECOND PHASE FORM MULTICHARGE COMPLEXES. UNDER ISOTHERMAL CONDITIONS AT GREATER THAN 800DEGREESC THE TRANSFORMATION PROCEEDS IN 2 STAGES. DURING THE FIRST 20 MIN A METASTABLE TE COMPLEX IS FORMED, WHICH IS THEN DISSOLVED AND A SECOND COMPLEX APPEARS, EVENTUALLY WITH THE FORMATION OF A FINELY DISPERSED SECOND PHASE. FACILITY: GOS. NAUCH.-ISSLED. PROEKT. INST. REDKOMETAL. PROM., MOSCOW, USSR.
UNCLASSIFIED

USSR

ANDRIANOV, D. G., BRANDT, N. B., ICON, E. R., FISTUL', V. N., and CHUDINOV, S. M.

"A New Commutation Effect in InSb"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fizika, Vol 17, No 9, 5 May 73, pp 494 - 498

Abstract: Detailed studies of Shubnikov-de Gaaz oscillations in N-type InSb monocrystals alloyed with Te at 10^{18} cm^{-3} indicate a commutation effect for a narrow range of carrier concentrations. Within this range a reversal of magnetic field direction with respect to electric current direction at low temperatures produces a qualitative change in the nature of oscillatory relationships. The nature and strength of the effect are dependent on the plane orientation of the crystal with respect to the magnetic field (which is always perpendicular to the electric current).

The phenomenon can be explained by postulating quasi-localized magnetic moments related to some virtual (resonant) levels, which cause changes in the law of dispersion in the conductivity zone of InSb in the neighboring energy region. The passage of a Fermi level (due to alloying or the effect of external pressure) through these resonance levels is accompanied by: a) their virtual saturation and the development of quasi-localized magnetic moments; b) a maximum

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ANDRIANOV, D. G., et al., Moscow, Pis ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 17, No 9, 5 May 73, pp 494 - 498

of the exchange interaction of the quasi-localized moments through electron conductivity at the Fermi level, leading to the development of long range magnetic order and the formation of an intracrystalline field.

USSR

UDC: 539.121.75

GRISHAYEV, I. A., YEFIMOV, V. P., KASILOV V. I., KOVALENKO, G. D., MOROKHOVSKIY, V. L., FISUN, A. N., SHRAMENKO, B. I., Physicotechnical Institute, Academy of Sciences of the Ukrainian SSR, Khar'kov

"Concerning Some Particulars of the Interaction of High-Energy Electrons and Positrons With Crystals"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 9, Sep 71, pp 1548-1550

Abstract: The total yield of electron and positron bremsstrahlung is studied as a function of crystal orientation when the primary beam is nearly parallel to the crystal axis. The electron and positron beams were characterized by the following data: the energy at the maximum of the spectra was (1000±5) MeV; the width of the energy spectra in both instances was ~4 %; there was no more than 8% difference between the average currents of the electron and positron beams; the difference in angular divergences of the beams was no more than $5 \cdot 10^{-5}$ radian; the number of charged background particles did not exceed 0.05% of the number of electrons and positrons respectively. The experiment was done on the

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GRISHAYEV, I. A. et al., Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 9, Sep 71, pp 1548-1550

accelerator at the Physicotechnical Institute of the Academy of Sciences of the UkrSSR. The background due to positron converter photons was 30% of the measured total photon yield and varied by 0.5% during the experiment. Silicon crystals 0.64 mm thick cut in plane (110) and niobium crystals 1 mm thick cut in plane (100) served as the specimens. The strongest distinguishing parameter on the curves plotted for bremsstrahlung yields as related to crystal orientation was the width of the minimum in the small-angle region, which was less for positrons than for electrons in both instances. Controlled experiments seem to indicate that this effect can be attributed to the sign of the charge. The authors thank V. M. Kobezskiy, V. I. Myakota, and V. I. Popenko for maintaining stable accelerator operation; V. I. Artemov for assisting with measurement of beam parameters; and Ye. A. Levikov for assisting with preparation of the crystals. One figure, bibliography of five titles.

2/2

USSR UDC 632.51

FISYUNOV, A., Doctor of Agricultural Sciences, All Union Scientific Research Corn Institute

"Current Status of and Prospects for Weed Control"

Moscow, Zemledeliye, No 5, 1971, pp 49-54

Abstract: There is available a sufficient body of theory and practical experiences to permit a degree of weed control sufficient to ensure substantial increases in yields of most crops throughout the country. Still the most effective approach is the use of differentiated farming practices in crop rotation with careful consideration given both to soil and climatic conditions and to the biological characteristics of the individual crops and weeds. Herbicides are of great value especially when combined with properly chosen and timed cultivation techniques. Biological controls (use of plants with a high weed-suppression capacity in crop rotation and introduction of insects, viral and fungus diseases) are promising but not yet at the stage where they can make a siginificant contribution.

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USSR UDC 632.954:633.15

FISYUNOV, A. V., All-Union Scientific Research Corn Institute

"Possibilities of Applying Herbicides to Sweet Corn and Popcorn Fields"

Moscow, Khimiya v Sel'skom Khozyaystve, No 9, 1971, pp 56-57

Abstract: A study was made of the effect of atrazine, simazine, chlorozine and 2,4-D on sweet corn and popcorn. Data are presented on the effects of the triazine herbicides on the weeds in the cornfields, the grain harvest of hybrid sweet corn Dneprovskiy 664 and popcorn var. Risovaya 645. Out of the mentioned herbicides, atrazine had the best effect on the sweet corn harvest. The harvest was higher even than it was in the case of double manual weeding. Both atrazine and simazine were effective on popcorn. Popcorn was more sensitive to 2,4-D than sweet corn on application, but no negative effect was observed in the harvest of either crop.

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USSR

UDC 632.954

FISYUNOV, A. V., All-Union Corn Scientific-Research Institute

"The Effect of Herbicides on the Viability of Weed Seeds"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 12, Dec '70, pp 48-50

Abstract: Studying the viability of weed seeds prevalent on corn fields, special studies were carried out using atrazine, simazine, propazine and 2,4-D. No correlation could be found between their action and the viability of the weed seeds, except for the 2,4-D, which decreased their viability. In general a direct correlation was found between the action of 2,4-D on the dicotyledonous weeds and the viability of their seeds. For example, while 2,4-D decreased substantially the viability of cared amaranth, its action on the seeds of white amaranth -- a more resistant species -- proved actually to be stimulating. In subsequent generations following the one treated with the toxic agent, 2,4-D showed no effect.

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USSR

UDC 632.954:633 ≠ 633.3

FISYUNOV, A. V., All-Union Scientific Research Institute for Corn, Dnepropetrovsk, All-Union Academy of Agricultural Sciences imeni V. I. Lenin

"Chemical Control of Weeds in Mixed Fields of Corn and Bean Cultures"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 6, Jun 70, pp 44-47

Abstract: Hybrid corn VIR 42 was planted with Dneprovskaya 12 soya in a ratio of two rows of corn to one of soya. Aqueous suspensions of the herbicides (atrazin, simazin, and propazin) in doses of 2 kg/hectare were sprayed immediately after planting. When the corn reached the size of 4-5 leaves it was also treated with the sodium salt of 2,4-D. The soya was not treated. A considerable portion of the weeds was destroyed and no detrimental effect was noted on germination or the growth of plants. The herbicides, as applied in this study, showed no detrimental effect on soya grown in heavily agrillaceous soil due to the fact that they are bound to the soil and do not penetrate to the germinating seeds planted at 1/2

USSR

FISYUNOV, A. V., Khimiya v Sel'skom Khozyaystve, Vol 8, No 6, Jun 70, pp 44-47

the depth of 8-10 cm. However, in light soils herbicides may penetrate to the depth of germinating seeds and should not be used in this manner. The harvest of both corn and soya treated with the above herbicides was higher than in the controls. Simazin was the most active herbicide.

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TITLE--CALORIMETRIC FLOW METER USED IN ALUMINA PRODUCTION -U-

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRINCIPLE OF THE TITLE FLOW METER IS THE HEAT EXCHANGE BETWEEN THE MEASURED STREAM AND AN AUXILIARY STREAM OF A HEAT EXCHANGE MEDIUM (E.G. WATER) WHICH FLOWS AT A CONST. RATE THROUGH A JACKET SURROUNDING THE TUBE WITH THE MEASURED STREAM. SEMICONDUCTOR THERMISTORS ARE USED FOR TEMP. MONITORING. A REGULAR HEAT BALANCE OF THE AUXILIARY STREAM IS CARRIED OUT, AS THE RESULT OF WHICH THE HEAT TAKEN UP BY THE AUXILIARY STREAM FROM THE MEASURED STREAM IS DETD., AND FROM THIS THE MASS OF THE MEASURED STREAM IS CALCD. THE RANGE OF TRIED TEMPS. OF THE MEASURED STREAM (SOLN. OF NA ALUMINATE) WAS 50-100DEGREES, WHILE THAT OF THE AUXILIARY STREAM (WATER) WAS 5-30DEGREES. THE FLOW RATES OF THE MEASURED STREAM WERE 400-4000 KG-HR. THE ERROR OF MEASUREMENT WAS PLUS OR MINUS 1.5PERCENT, WHILE THE DURATION OF THE TRANSITION PERIOD, WHEN THE FLOW RATE WAS BEING CHANGED RAPIDLY BY 50PERCENT, WAS 20 SEC.

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LYUBCHIK, Ya. G., SAVINA, N. V., FITKOVA, T. Ya., SHKUNOV, V. A.

"Improving the Sensitivity of Cathode-Ray Oscillographs by Using Electrostatic Quadrupole Lenses"

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Abstract: It is experimentally and theoretically shown that a triplet of quadrupole lenses can be used as a system for focusing and after-deflection of the electron beam in an oscilloscope CRT. It is concluded on the basis of the data presented that the proposed method has promise for improving sensitivity. A further increase in the specific sensitivity of cathode-ray oscilloscopes can be achieved by eliminating the spherical aberrations of the quadrupole lenses. The tube design used in the experiment with electrostatic quadrupole lenses is slightly more complicated than that of the analogous tube with axial electrostatic lens, but is much simpler than a tube with a magnetic focusing system.

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